



COMBO DRIVE SM-316

User's Guide

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

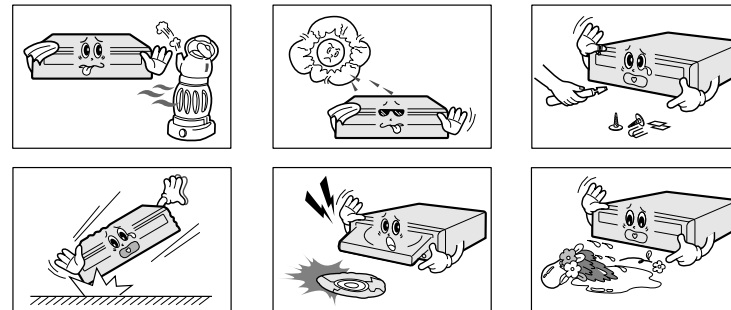
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* All product names mentioned in this document are trademarks or registered trademarks of their respective owners.

Safety Precautions

The following diagrams illustrate the precautions to be taken when using your COMBO drive.



* Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

You must not use the drive in any manner other than that specified in this guide.

CAUTION

Do not attempt to repair the COMBO drive yourself.
Contact your dealer or local SAMSUNG representative for all repairs.
If you make any adjustments or perform any operations other than those specified in this guide, you run the risk of exposure to hazardous radiation.

Avoid exposing your eyes or skin to direct or scattered radiation.

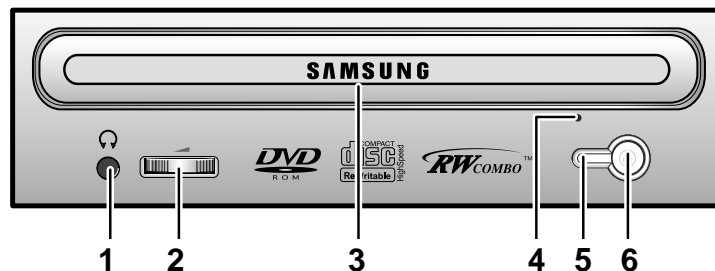
WARRANTY

Please refer to the Samsung limited warranty statements.

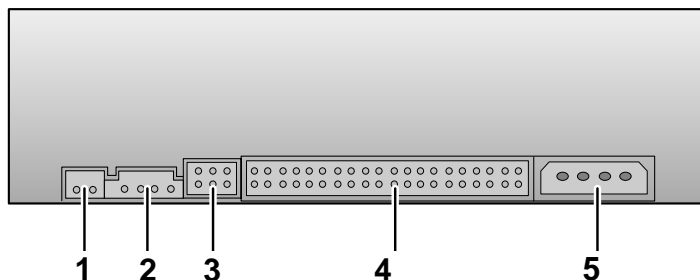
PRECAUTIONS

1. To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.
2. Always check each disc for cracks before using it. If there are cracks on the surfaces, especially around the border of the center hole, we recommend that you make a copy of the disc immediately and then stop using it. If you continue using the disc, it will probably develop more cracks and eventually cause irreparable damage.
3. Do not use poor quality discs:
 - From unknown sources
 - Without any copyright
 - Scratched or damaged in any way

Your COMBO Drive



1. Connector for stereo headphones with a 3.6 mm stereo mini-jack
2. Headphone volume control
3. Disc compartment (the compartment opens and closes automatically when you press the Eject button)
4. Emergency eject hole (if the compartment does not open when you press the Eject button, power off the computer, insert a pin or unfolded paper clip in the hole and push firmly)
5. Indicator light
6. Eject button



1. Two-pin digital audio output terminal for use with a sound or MPEG card supporting digital audio features
2. Four-pin sound output terminal for use with a sound card (refer to the sound card documentation for further details)
3. Master/slave select terminal
4. 40pin host E-IDE interface connector
5. 4pin power terminal

Upgrading the Firmware Flash Memory

The product firmware can be upgraded by downloading the updated file from the following Web site:

<http://www.samsungodd.com>
www.samsungelectronics.com

System Requirements

Before you install the COMBO drive, we strongly recommend that you check that your setup meets the system requirements listed below.

| Item | Description |
|---------------------|--|
| Computer | Intel Pentium II 300MHz/Celeron 333A(or higher), 32 MB of RAM (or higher) with an IDE interface |
| Free expansion unit | 5.25 inch |
| Disk space | 700 MB minimum |
| Windows version | Windows 95/98/2000/ME/XP/NT4.0 OSR2 (or higher) (For Windows NT, we recommend Service Pack2, and Version is over 4.00.1381) |
| MS-DOS | 5.0 or higher (For MS-DOS, The CD-R/CD-RW driver can only read a disc without premaster Software.) |
| DVD Video playback | PC with Windows 95/98/2000/ME/XP/NT4.0 OSR2 DVD-Video playback software and appropriate hardware (the Power DVD MPEG software is included in the COMBO drive package) |

DVD Region Protection Coding (RPC):

The RPC feature is supported on DVD players and is used with DVD-video discs (such as movies). Currently, the motion picture industry has divided the world into different regions or zones that correspond to the regional markets into which the motion picture industry releases movies. Simply put, RPC codes are placed on movies marketed throughout the world, based on the region of the world in which they are being sold. These RPC codes help control and prevent pirating of new movies into other motion picture regions prior to their true release dates within those markets.

The SM-316 COMBO drive supports RPC phase II. In the RPC-2 mode, the local code can be changed by users.

RPC-2 is selected by default for the SM-316 COMBO drive.

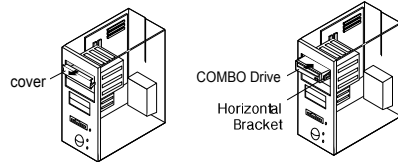
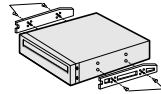
You can change the region code up to five times via an MPEG application.

Please contact your dealer or local SAMSUNG representative if you wish to change the local code more than five times.

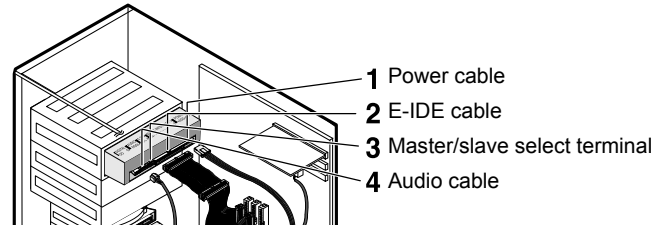
Installing the COMBO Drive

To install your COMBO drive in the PC, proceed as follows.

- 1 Make sure that the PC is powered off and disconnected from any power source.
- 2 If necessary, attach a horizontal bracket to both sides of the drive.
 - Use of the brackets depends on your computer model; you can purchase these accessories separately from your computer dealer.
- 3 Remove the cover from a free expansion slot and install the COMBO drive, as shown in the illustration.
 - If you have no free expansion slot, install the drive in place of the diskette drive.

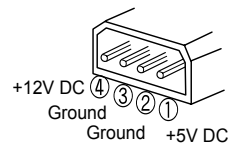
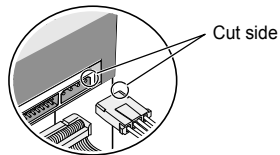


Connecting the Cables



1 Connecting the power cable

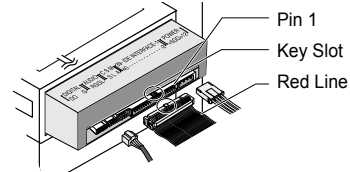
The 4-pin power cable from the internal power unit of your computer must be connected to the power terminal on the rear of the COMBO drive.



Note: An improperly connected power cable may cause trouble. Check the direction of the power connector and the incline side of the COMBO drive before connecting.

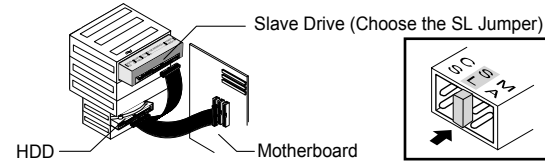
2 Connecting the IDE cable

Insert the IDE cable (40-pin), which is connected to the hard disk to the interface terminal. (Place the red line of the cable close to the Pin 1.)



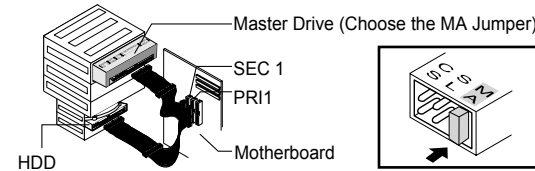
When using one E-IDE cable

Connect the cable to the SL (Slave) of the Master/Slave Select Terminal at the rear of the COMBO drive.

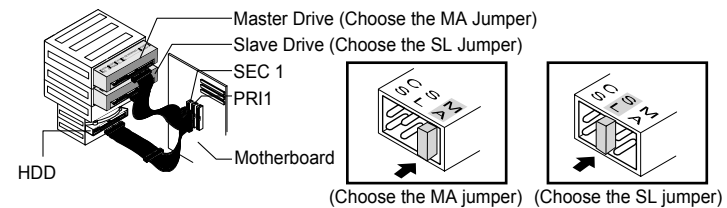


When using two E-IDE cable

- If there is only one COMBO drive, select MA (Master).



- If there is two COMBO drive, select MA (Master) / SL (Slave).



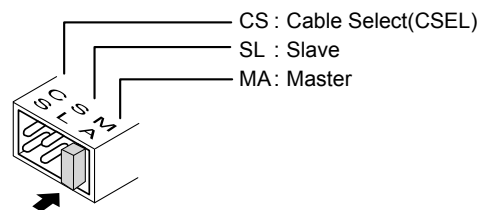
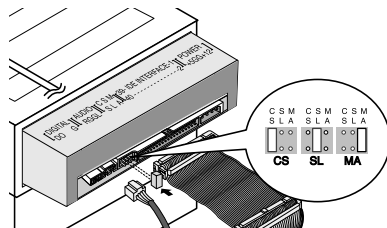
3 Installing a jumper on the master/slave select terminal

Connect a jumper to the rear side of the COMBO.

If the jumper is connected to MA (Master), it will work in the Master mode.

If the jumper is connected to SL (Slave), it will work in the Slave mode.

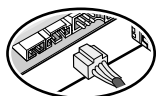
If the jumper is connected to CS (CSEL), you can control the device by using the host interface signal CSEL. (In general, connection to MA is recommended.)



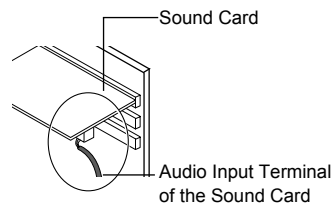
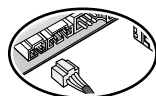
4 Connecting the audio cable from a sound card

- Connect the 4-pin audio cable between the sound output terminal on the COMBO drive and the audio input terminal on the sound card.
- For clearer sound, use a digital output terminal. (Available only for the CAID that supports digital output)
This may not be available for general sound cards.

Sound Output Terminal



Digital Output Terminal



Installing the CD Record Utility

To record data on a CD-R or CD-RW disc in the COMBO drive, you must first install the CD record utility. For compatibility reasons, you are recommended to uninstall any existing software of the same type before installing this utility.

- 1 Insert the disc supplied with the COMBO drive in the drive.
- 2 Follow the instructions displayed on the screen to install the utility. Refer to the separate utility documentation for further details.
- 3 Store the utility disc in a safe place.

Installing the Device Driver

No additional device driver is needed for Windows 95/98/2000/ME/XP/NT4.0, as the default Windows device driver is used. You can check that the COMBO drive has been correctly detected by Windows. To do so, proceed as follows.

- 1 Double-click on the **My Computer** icon on your desktop.
- 2 Double-click on the **Control Panel** folder.
- 3 Double-click on the **System** icon.
- 4 Click on the Device **Manager** tab.
- 5 Expand the CD-ROM branch.
The **SAMSUNG COMBO SM - ***** device name is displayed.

The SAMSUNG device driver enables discs in the COMBO drive to be read but not recorded in an MS-DOS environment; the driver is located in the D driver folder on the CD record utility disc.

Setting Up the Device Driver

◆ Automatic Setup

- 1 Insert the setup diskette in the diskette drive and change the directory to A:, where A: is the diskette drive.

To do so, type **A:** after the **C:** prompt and press **[Enter]**.

- 2 Type **CDSETUP** and press **[Enter]**.

- 3 Reboot the computer.

◆ Manual Setup

- 1 Make the **C:\SAMSUNG** directory.

- 2 Copy the files from the diskette to the **C:\SAMSUNG** directory.

To do so, type **COPY A: *.* C:\SAMSUNG** after the **C:** prompt and press **[Enter]**.

- 3 Edit the **CONFIG.SYS** file.

Add the **DEVICE=C:\SAMSUNG\SSCDROM.SYS ID:SSCD000/V** entry.

```
LAST DRIVE = Z
.....
DEVICE = C:\SAMSUNG\SSCDROM.SYS ID:SSCD000/V
```

- 4 Edit the **AUTOEXEC.BAT** file.

Add the **C:\SAMSUNG\MSCDEX/D:SSCD000** entry.

```
.....
C:\SAMSUNG\MSCDEX /D:SSCD000
```

- 5 Reboot the computer.

Using the COMBO Drive

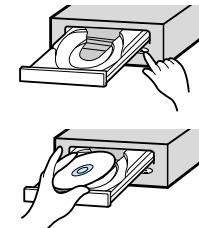
To play audio or video CDs and / or DVDs in your COMBO drive, proceed as follows.

- 1 Push the power button and boot the computer.

- 2 After booting the computer, open the disc compartment by pressing the Eject button.

- 3 Insert the disc (CD/DVD) with the label on the disc facing upwards and close the disc compartment by pressing the Eject button. The indicator light comes on.

- 4 Play the disc (CD/DVD).



Playing Audio CDs

Run the CD player supplied with Windows or your sound card.

You can listen to the CD by connecting an earphone to the earphone connection terminal.

Playing DVDs or Video CDs

Set up and run the SOFT MPEG program supplied as an accessory.

Storing and Cleaning Your Discs

To ensure a long service life for your discs and drive, follow the pre-cautions below when storing and cleaning your discs.

- 1 Do not place a disc in direct sunlight.

- 2 Store a disc vertically in a well-ventilated and stable location.

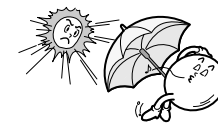
- 3 Do not write or attach a label on a disc.

- 4 Do not drop a disc or place heavy objects on it.

- 5 Do not touch the surface of a disc; hold it by the edges.

- 6 To clean a disc, polish lightly from the inside of the disc to the outside with a soft cotton cloth.

- 7 Do not leave the disc compartment open when you are not using it.



Solving Recording Problems

If you have any problems recording via your COMBO drive, follow the appropriate instructions below for the source that you are using.

◆ Hard Drive

- 1 Check whether the source file is corrupted.
- 2 Optimize the hard disk by using the Windows defragmenter feature:
START / PROGRAMS / ACCESSORIES / SYSTEM TOOLS / DISC DEFRAGMENTER
- 3 Decompress the hard disk if it is compressed.
- 4 Make sure that the space available on the hard disk is at least twice the size of the largest file to be recorded on the disc.
- 5 If you wish to record more than 1000 small files:
 - First create an image file and copy the image file to the disc.
 - Choose the low record speed
 - Compress small files and then record them

◆ CD-ROM Drive

- 1 Clean the source CD, if necessary.
- 2 Create an image file and then copy the image file to the COMBO drive.
- 3 Check the CD-ROM drive record speed.
There are two recording methods :
 - Low-speed (file by file)
 - High-speed (transfer of an image file from the hard disk)
- 4 If the transfer speed of the CD-ROM drive is slower than the record speed, reduce the record speed.

Note

The COMBO Drive provide a high speed rewriting Disc recording function (CD-RW 10X). To rewrite at a high speed, use the disc which High Speed is printed on.

HS-RW : supporting 4X, 10X
General-RW : supporting 2X, 4X

◆ Network Drive

- 1 Copy the network drive contents to the hard disk and then from the hard disk to the COMBO drive.

Caution with errors

Every CD-R or CD-RW drive records data by applying recording laser onto a CD. If the CD is damaged or recording data is not possible, you need to remove the following causes of the error before using the CD.

- It is recommended to set a CD-R or CD-RW drive as follows.

1 Do not work on a multi-tasking environment and remove screen savers.

- If you work on a multi-tasking environment while the CD-RW drive is recording/deleting data, Buffer Under-Run may occur.

2 Do not allow any external access to the Host PC while recording data.

- If another user accesses your printer through a network while you are recording data, errors may occur.

3 Remove the Auto-Run function of the CD.

- If you insert a CD that has the Auto-Run function to a drive connected to a PC while recording/deleting data, this may cause errors.

How to cancel (select) the Auto-Run function

Cancel (Select) the Auto-Run function in [Start > Setting > Control Panel > System > Device Manager > CD-ROM Setting]

4 Use image files when you record many small files.

- If you use a lot of small size files for recording, this may reduce the transaction rate of the PC. Although Justlink function is often run, the recording quality may become low.
- If you copy a CD from another, you do not require making available space in the hard disk. However, when you use image files, you need to copy them on the hard disk first and then copy to a CD. In this case, you need to ensure maximum 700MB of available space in the hard disk for reliable recording process.

5 Use an E-IDE cable, which has the specified length (46cm).

- Using E-IDE cables longer than 46cm may cause errors during data transaction.

6 Use only one recording software program.

- To install a software program for recording, uninstall any other types or versions of recording software programs first and then reboot the computer.

Make sure you use the recording software CD (Nero Burning Rom / Roxio Easy CD Creator) provided by us. Using our software program with others may cause errors in recording.

- Not compatible with **Windows 95** in case of **Roxio Software**.

Term Description

What is Buffer Under-Run?

Every CD-R or CD-RW drive records the data that the Host PC wants to record until the data flow ends. However, if the buffer becomes empty temporarily, this may cause errors in recording data.

What is Auto-Run?

If inserting a CD into a drive, the operating system executes the Autorun.inf file of the CD automatically.

Recommended Disc Types

CD-R Ricoh, Taiyo Yuden, Samsung, Mitsui, SKC, CMC, Ritek, Kodak Fujifilm, POSTECH

CD-RW Ricoh, Samsung, CMC, Ritek, SKC



General DMA Installation Guide

(Windows 95/98/Me)

Important!

Please read the entire DMA installation guide before installing your COMBO drive.

About DMA Installation

For stable writing performance at high speeds, Installation of DMA transfer mode for E-IDE/ATAPI interface is strongly recommended.

We recommend DMA mode for fast writing.

DMA Setting

Before you install your COMBO drive, we recommend to set DMA to enabled on your PC system. See the following procedure to set DMA transfer mode in windows operating system. (Windows 95 OSR2/98/ME)

- | | |
|--|--|
| ● Click on START | ● Select your CD-R/RW drive |
| ● Click on Settings | ● Click on the Properties button |
| ● Select Control Panel | ● Click on the Settings tab |
| ● Select the System Icon | ● Check the DMA checkbox to enables DMA. |
| ● Select the Device Manager panel in System Properties | ● Click OK |
| ● Expand the CD-ROM icon | ● Restart your PC |

Windows 2000/XP

Select the DMA mode by selecting [Start > Setting > Control Panel > System > Device Manager > IDEATA/ATAPI Controller > Default/Assistant IDE Channel Advanced Information]

Solving Technical Problems

| Problem | Meaning / Solution |
|---|--|
| The COMBO drive is not detected by the computer. | Check that the power, audio and IDE cables are correctly connected to the computer. |
| After installing the COMBO drive, the PC gets slower. | Change the IDE cable and reconnect it to the computer. Preferably, connect a second IDE cable to the COMBO drive in master mode. |
| | Check the position of the jumper in the master/slave select terminal. |
| The COMBO drive is not recognized by MS-DOS. | Reinstall the device driver or update it with the latest version by downloading it from the Samsung Web site. - www.samsungodd.com - www.samsungelectronics.com |
| The COMBO drive is not detected by Windows. | This case may occur when there is a Windows installation problem; reinstall Windows. |
| No sound is heard from an audio CD. | Check whether the audio cable is correctly connected to the sound output terminal on the COMBO drive and the sound card CD-IN terminal. |
| | Check that the sound card is operational. |
| | Adjust the volume control. |
| | Run the CD player supplied with Windows or your sound card. You can listen to the CD by connecting headphones to the appropriate connector. If you have installed the appropriate player, such as Microsoft Windows Media Player, you can adjust the volume using the headphone volume control on the drive front panel. |
| | If you select DIGITAL at CD Audio Play in Media Player of Windows ME/XP, the earphone does not appear in the Digital Mode. |
| A CD is not read or is read too slowly. | Check whether the CD is of good quality and clean it, if necessary. |
| The disc compartment will not open. | Check that the power cable is correctly connected. |
| | Power off and disconnect the PC. Insert a pin or unfolded paper clip in the emergency hole and push firmly until the disc compartment opens. |

| Problem | Meaning / Solution |
|--|--|
| When the MPEG software plays a Video CD, the pictures are not regular and the running speed is too slow. | Adjust the size of the replay screen. After checking the display resolution, adjust it, if necessary. |
| The Disc is not in message is displayed even though a disc has been inserted. | The computer may not recognize the disc if you start playback too quickly after inserting the disc. Open and close the disc compartment and try again. |
| | Clean the disc and try again. |
| The COMBO drive is not detected after it is connected to a sound card. | The interface mode of the sound card is AT-BUS. You must therefore connect the COMBO drive to the IDE port on the PC mother board, rather than to the sound card, or install an E-IDE compatible sound card. |

Technical Specifications

SAMSUNG continually strives to improve its products. Both the design specifications and these user instructions are thus subject to change without notice.

| ITEM | | CD-RW | DVD / CD | |
|-----------------------|---|---|---|---|
| DISC | Disc types supported in read mode | DVD-ROM, DVD-VIDEO, DVD-R, DVD - RW, CD-DA (Audio), CD-ROM, CD-ROM XA, CD-Plus, CD-Extra, Photo-CD (Single, Multi-session), Video CD ready, Enhanced CD, CD-I/FMV, CD-R, CD-RW, CD-TEXT | | |
| | Erasing disc types | CD-RW | | |
| | Disc diameter | 120 mm or 80 mm | | |
| DRIVE PERFORMANCE | Data transfer rate | Recording | CD-R | 600KB/sec (4X), 1200KB/sec (8X) 1800KB/sec (12X), 2400KB/sec (16X) |
| | | | CD-RW | 300KB/sec (2X), 600KB/sec (4X) 1500KB/sec (10X) |
| | | Reading | CD/CD-R | CAV 40 Access Time |
| | | | DVD | CAV 12 Access Time |
| | | | PIO Mode 4:16.6MB/sec Multiword DMA mode 2:16.6MB/sec Ultra DMA mode 2:33.3MB/sec | |
| | | Access time (typical) | 110ms (typical) | 130ms/110ms (typical) |
| | Data Buffer | 8MB | | |
| | Laser | Semiconductor laser | | |
| | Slide mechanism | Stepping motor | | |
| | Spindle motor | Brushless motor | | |
| Load mechanism | Tray. DC motor (Soft Eject). Horizontal/Vertical. | | | |
| ERROR RATE | | Mode 1: 1 block/10 ¹² , Mode 2: 1 block/10 ⁹ | | |
| FRONT PANEL | Eject button | Auto eject or Auto inject | | |
| | Indicator | If the Power is ON/BUSY, this means the disc is loaded. Green: Reading/Recording Status | | |
| | Headphone output | Stereo mini-jack (Ø 3.6 mm) 0.6±20% (vrms) 33Ω | | |
| | Volume control | Dial type | | |
| REAR PANEL | Required power | +5 VDC: 2.0A (max.), +12 VDC: 1.5 A (max.) | | |
| | Interface connector | ATAPI (E-IDE) | | |
| | Audio output | Line out 0.75±20% (vrms) : 47KΩ | | |
| | Jumper block | Molex 70203 or other compatible models | | |
| OPERATING ENVIRONMENT | Operations | Temperature: 0~50°C Humidity: 10~80% | | |
| | Storage | Temperature: -25~55°C Humidity: 10~90% | | |
| GENERAL | Dimensions | 148.2 (W) x 42 (H) x 184 (D) mm (including bezel) | | |
| | Net weight | 770 g | | |
| RELIABILITY | MTBF | 125,000 POH(Duty 20%) | | |